# Crestron **FT-TSC600**
# FlipTop™ Touch Screen Control System
# Operations & Installation Guide

CRESTRON®

## Regulatory Compliance

This product is Listed to applicable UL Standards and requirements by Underwriters Laboratories Inc.

As of the date of manufacture, the FT-TSC600 has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.

**Federal Communications Commission (FCC) Compliance Statement**

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

**CAUTION:** Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

**Industry Canada (IC) Compliance Statement**

CAN ICES-3(B)/NMB-3(B)

The specific patents that cover Crestron products are listed at patents.crestron.com.

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# FlipTop Touch Screen Control System: FT-TSC600

## Introduction

The FT-TSC600 FlipTop™ Touch Screen Control System by Crestron® provides a configurable control and connectivity solution in a stylish, flush mount tabletop design. Its built-in 3-Series® control processor and brilliant 5" (127 mm) color touch screen combine to deliver a complete, space-saving controller for any small conference room or similar space. The built-in connection compartment keeps interface cables and connectors at the ready for plugging in laptop computers, mobile devices, AV sources, and other equipment.

A FlipTop Touch Screen Control System is an ideal complement to a DigitalMedia™ system or any other AV system. It provides an intuitive and inviting "front end" for the more complex and mundane technology beneath the tabletop and throughout the room. The integrated touch screen and control processor can provide total control for an entire room, offering a fully customizable user interface for selecting presentation sources, adjusting audio levels, dimming the lights, and even calling for lunch service. Advanced capabilities include displaying full-motion video and hands-free audio conferencing[1].

### Features and Functions

- Flush mount tabletop control and connectivity in one stylish FlipTop design
- Built-in 3-Series control processor
- Onboard 10/100 Ethernet and Cresnet® master ports[2]
- Control port expansion via C2N-IO modules (sold separately)
- Integrated 5" capacitive color touch screen with Smart Graphics™ support[3]

***(Continued on following page)***

1. Supports audio conferencing with another Rava-enabled device over an IP network, or with any telephone device through integration with a SIP-compatible phone system or SIP server.
2. To supply Cresnet power via the **NET** port, the FT-TSC600 must be powered using an IEE 802.3at Type 2 PoE+ PSE (Power Sourcing Equipment). If the FT-TSC600 is powered by an 802.3af or 802.3at Type 1 Poe PSE, no load should be connected to the **24** terminal of the **NET** port, and an external Cresnet power supply must be used to power any attached dev ices that require Cresnet power.
3. Supports Smart Graphics only. Not compatible with "traditional" UI projects.

## Features and Functions

***(Continued)***

- High performance H.264 streaming video over Ethernet
- Seamless integration with Crestron DigitalMedia
- 5 soft-touch capacitive buttons for common functions
- Hands-free audio conferencing using Rava™ SIP intercom technology[1]
- Customizable audio feedback
- Built-in microphone and speaker
- Balanced line out for amplification of the speaker signal
- PoE+ network powered
- Configurable connection compartment allows versatile combinations of pullout cables, cable retractors, connector plates, and AC power outlets[2]
- Tapered cable notch allows lid to be closed with cables plugged in
- Universal cutout size fits all new and future FlipTops™
- Black anodized or brushed aluminum finish

### *No Equipment Rack Required!*

The FT-TSC600 encapsulates the industry's best control techniques in a single space-saving design that can alleviate the need for a separate equipment rack. Ethernet and Cresnet connectivity affords direct communication with AV, lighting, and other equipment, and allows for expanded connectivity using C2N-IO Control Port Expansion Modules[2] and other Crestron control modules.[3]

### *FlipTop Design*

Handsomely finished in a choice of black anodized or brushed aluminum, Crestron FlipTops lend a contemporary metallic accent to conference tables and podiums. The FT-TSC600 installs cleanly in virtually any flat, horizontal surface up to 1 3/4" (44 mm) thick. Beveled edges provide for a nearly flush appearance.

The FlipTop lid flips open with just the tip of a finger to access the touch screen and connection compartment. Once connections and touch screen settings are made, the lid can be closed. A generous, tapered notch at the front of the lid opening allows interface cables to remain connected even when the lid is closed.

### *Connection Compartment*

The FT-TSC600 is highly configurable to provide a well organized connectivity solution tailored to each unique application. It provides options for both pullout cables and panel-mounted connectors, with or without AC power outlets. It comes standard with two cable pass-through plates and four blank plates, all of which can be swapped out for a choice of cable retractors, connector plates, and AC power outlet modules.

1. Supports audio conferencing with another Rava-enabled device over an IP network, or with any telephone device through integration with a SIP-compatible phone system or SIP server.
2. Item(s) sold separately.
3. To supply Cresnet power via the **NET** port, the FT-TSC600 must be powered using an IEE 802.3at Type 2 PoE+ PSE (Power Sourcing Equipment). If the FT-TSC600 is powered by an 802.3af or 802.3at Type 1 Poe PSE, no load should be connected to the **24** terminal of the **NET** port, and an external Cresnet power supply must be used to power any attached dev ices that require Cresnet power.

- **Cable Pass-Through Plates** – Each cable pass-through plate provides four grommeted holes to accommodate Crestron Certified Interface Cables[1] and other AV, data, and communication cables. The user end of each cable stows neatly within the connection compartment ready for use while excess cable simply drops out of sight below the cable pass-through plate. The grommets provide a smooth, slippery surface for easy pullout of each cable. Blank caps are also provided to cover any unused holes. The cable pass-through plates are positioned at the left and right sides of the connection compartment. The FT-TSC600 supports one or two cable pass-through plates. Two are included.
- **Cable Retractors** – For an even more refined cable management solution, the FT-TSC600 accommodates up to six Crestron CBLR Cable Retractors[1]. Crestron cable retractors feature a patent pending, lever-actuated retraction mechanism that ensures smooth operation while eliminating hanging cable loops beneath the table. Up to three cable retractors can be installed in place of each cable pass-through plate, allowing for a total of six cable retractors.
- **Connector Plates** – If panel-mounted connectors are preferred, the FT-TSC600 can accommodate up to four FTA-CP Connector Plates[1]. Connector plates are offered with a variety of common AV and data connector types. Custom connector plates may also be fabricated by the installer using the blank plates provided. All four connector plates are positioned at the center of the connection compartment.
- **AC Power Outlet Modules** – To provide power for laptops and other portable devices, the FT-TSC600 can be equipped with up to four AC power outlets. A single FTA-PWR-102 Dual AC Power Outlet Module[1] can be installed in place of two of the connector plates or two FTA-PWR-102 modules can be installed in place of all four connector plates.

## *Integrated 5” Touch Screen*

Flipping open the “FlipTop” lid exposes a large 5” (127 mm) capacitive touch screen display, gracefully angled for easy operation and viewing. Smart Graphics technology provides a stunning custom user interface with fluid gesture-driven controls, animated feedback, metadata, embedded apps, and high-performance H.264 video. Five soft-touch capacitive buttons are also provided for quick access to commonly used functions.

## *Streaming Video*

High-performance streaming video capability makes it possible to preview a video source during a presentation or see a live camera image while video conferencing, right on the FlipTop screen. Support for H.264 and MJPEG formats allows the FT-TSC600 to display streaming video from an IP camera, a streaming server (Crestron CEN-NVS200[1] or similar), a DigitalMedia switcher[2], or a Capture HD® system. Video is delivered to the touch screen over Ethernet, eliminating the need for any extra video wiring. For more information on video streaming, refer to Answer ID #5195 at http://support.crestron.com/app/answers/detail/a_id/5195/kw/streaming%20video.

1. Item(s) sold separately.
2. Streaming output is currently available on the following DigitalMedia switcher models: DM-MD8X8, DM-MD8X8-RPS, DM-MD16X16, DM-MD16X16-RPS, DM-MD32X32, and DM-MD32X32-RPS.

### *Hands-Free Audio Conferencing*

Using Rava SIP intercom technology, the FT-TSC600 enables hands-free VoIP communication between any two Rava-enabled Crestron touch screens. Rava works over Ethernet, supporting audio conferencing[1], intercom, video intercom[2], and paging without any special wiring. VoIP phone capability is also possible through integration with a SIP-compatible IP phone system or SIP server, allowing hands-free telephone and teleconferencing functionality complete with speed dialing, caller ID, custom ringers, and other enhancements. Built-in echo cancellation affords true duplex performance for clear, seamless voice communication using the FT-TSC600's integrated microphone and speaker.

### *Line Output*

In addition to its onboard speaker, the FT-TSC600 includes a balanced line level audio output, allowing the speaker signal to be routed to the room's audio system. Amplifying the FlipTop's audio signal through the room speakers enhances its audio conferencing capabilities, allowing a small group of individuals to participate in a conference call using a single FT-TSC600.[1]

### *3-Series Control Engine*

The FT-TSC600 features a built-in 3-Series control processor, which can eliminate the need for a separate rack mounted control system for many applications. Crestron 3-Series delivers a distinctively robust, dynamic, and secure control system platform capable of faithfully managing a room full of disparate technologies, from audio and video equipment to lighting, climate control, shades, drapes, and other amenities. Its modular programming architecture allows the FT-TSC600 to run multiple programs simultaneously for increased efficiency and flexibility. Rock solid networking and IP control afford seamless integration with other systems and devices, with add-on control capability using Crestron touch screens, wireless remotes, and mobile devices, and remote management through Crestron Fusion™ Enterprise Management Software.

### *Cresnet*

Equipped with a Cresnet master port, the FT-TSC600 supports the full line of Crestron keypads, lighting controls, shades, thermostats, sensors, and other devices that don't require the higher speed of Ethernet.[3]

### *Control Port Expander*

Interfacing with IR, serial, and relay controlled devices is facilitated using the C2N-IO Control Port Expansion Module[4]. The C2N-IO is a compact device that can be mounted virtually anywhere. It connects to the FT-TSC600 via the Cresnet port and provides one bidirectional RS-232 port, one IR/serial port, and two relay ports for integration with third-party devices. A total of two C2N-IOs can be connected directly to the FT-TSC600 without requiring an additional power supply[3]. Besides the C2N-IO, the FT-TSC600 is compatible with the complete line of Cresnet and infiNET EX® control modules, as well as 3-Series control card interfaces.

1. Supports audio conferencing with another Rava-enabled device over an IP network, or with any telephone device through integration with a SIP-compatible phone system or SIP server.
2. H.264 compatible IP camera required.
3. To supply Cresnet power via the **NET** port, the FT-TSC600 must be powered using an IEE 802.3at Type 2 PoE+ PSE (Power Sourcing Equipment). If the FT-TSC600 is powered by an 802.3af or 802.3at Type 1 Poe PSE, no load should be connected to the **24** terminal of the **NET** port, and an external Cresnet power supply must be used to power any attached dev ices that require Cresnet power.
4. Item(s) sold separately.

### *BACnet/IP*

Native support for the BACnet™/IP communication protocol provides a direct interface to third-party building management systems over Ethernet.[1]

### *Power over Ethernet*

Using PoE+ technology, the FT-TSC600 gets its operating power right through the LAN wiring. PoE (Power over Ethernet) eliminates the need for a local power supply or any dedicated power wiring. The FT-TSC600 supports LLDP advanced power management, requiring only 15 Watts from the PoE power budget when powered by a compatible PoE+ switch such as the Crestron CEN-SWPOE-16[2].

1. License required. The FT-TSC600 supports a maximum of 250 BACnet objects when dedicated for BACnet use only. Actual capabilities are contingent upon the overall program size and complexity.
2. Item(s) sold separately.

## Specifications

Specifications for the FT-TSC600 are listed in the following table.

***FT-TSC600 Specifications***

| SPECIFICATION | DETAILS |
|---|---|
| Touch Screen Display | |
| Display Type | TST active matrix color LCD |
| Size | 5 inch (127 mm) diagonal |
| Aspect Ratio | 15:9 WVGA |
| Resolution | 800 x 480 pixels |
| Brightness | 300 nits (cd/$m^2$) |
| Contrast | 450:1 |
| Color Depth | 24-bit, 16.7 million colors |
| Illumination | Edgelit LED |
| Viewing Angle | ±69º horizontal, +62º /-64º vertical |
| Touch Screen | Projected capacitive |
| Buttons | |
| Hard Keys | (5) Projected capacitive push buttons, programmable, pre-labeled with icons for “Power”, “Home”, “Lights”, “Up”, and “Down” |
| Memory | |
| DDR3 SDRAM | 1 GB |
| Flash | 4 GB |
| Maximum Project Size | 512 MB |
| Control Engine | 3-Series; real-time, preemptive multithreaded/multitasking kernel; Transaction-Safe Extended FAT file system; supports up to 10 simultaneously running programs |
| Graphics Engine | Supports Smart Graphics[1] |
| Communications | |
| Ethernet | 10/100 Mbps; auto-switching; auto-negotiating; auto-discovery; full/half duplex; industry-standard TCP/IP stack; UDP/IP; CIP; DHCP; SSL; IEEE 802.1X; SNMP; BACnet/IP[2]; IPv4 or IPv6; Active Directory authentication; IIS v 6.0 web server; SMTP e-mail client; installer setup via Crestron Toolbox™ or MSIE[3], IEEE 802.3at Type 2 compliant |
| Video | |
| Streaming Formats | H.264 (MPEG-4 part 10 AVC), MJPEG |
| Audio | |
| Features | Built-in microphone and speaker, Rava SIP Intercom, line out (same signal as speaker) |
| Audio Feedback Format | MP3 |

***(Continued on following page)***

*FT-TSC600 Specifications (Continued)*

| SPECIFICATION | DETAILS |
|---|---|
| Power Requirements | |
| Power over Ethernet | IEEE 802.3at Type 2PoE+ powered device;<br>15 Watts if using an 802.3at Type 2 PSE with LLDP advanced power management;<br>Class 4 (25.5 W) if using an 802.3at Type 2 PSE without LLDP;<br>Class 0 (12.95 W) if using an 802.3af (or 802.3at Type 1) PSE (no Cresnet power available at **NET** port)[4] |
| Available Cresnet Power | 5 watts (208 mA @ 24 Vdc)[4] |
| Utility Power | 10 amps at 125 Vac 50/60 Hz per each installed Dual AC Power Outlet Module, model FTA-PWR-102[5] |
| Default NET ID | 02 |
| Environmental | |
| Temperature | 32º to 112º F (0º to 45º C) |
| Humidity | 10% to 90% RH (non-condensing) |
| Heat Dissipation | 51 Btu/h |
| Enclosure | |
| Chassis | Metal, black |
| Cover | Aluminum, black anodized or brushed aluminum finish |
| Touch Screen Bezel | Aluminum |
| Mounting | Flush tabletop mount, 1 3/4 in (44 mm) maximum surface thickness, 6 1/4" (159 mm) deep x 7 1/2 in (190 mm) wide cutout (template provided) |
| Dimensions | |
| Height | 8.59 in (218 mm)<br>12.34 in (313 mm) with lid open |
| Width | 7.98 in (203 mm)<br>9.19 in (234 mm) with mounting brackets |
| Depth | 6.77 in (172 mm)<br>7.88 in (200 mm) with lid open |
| Weight | 5.2 lb (2.4 kg) |
| Available Models | |
| FT-TSC600-B | FlipTop Touch Screen Control System, Black Anodized |
| FT-TSC600-BALUM | FlipTop Touch Screen Control System, Brushed Aluminum |
| Available Accessories | |
| 3-Series BACnet/IP Support | 3-Series Native BACnet/IP Interface License |
| C2N-HBLOCK | Cresnet Network Distribution Block |
| C2N-IO | Control Port Expansion Module |

*(Continued on following page)*

***FT-TSC600 Specifications (Continued)***

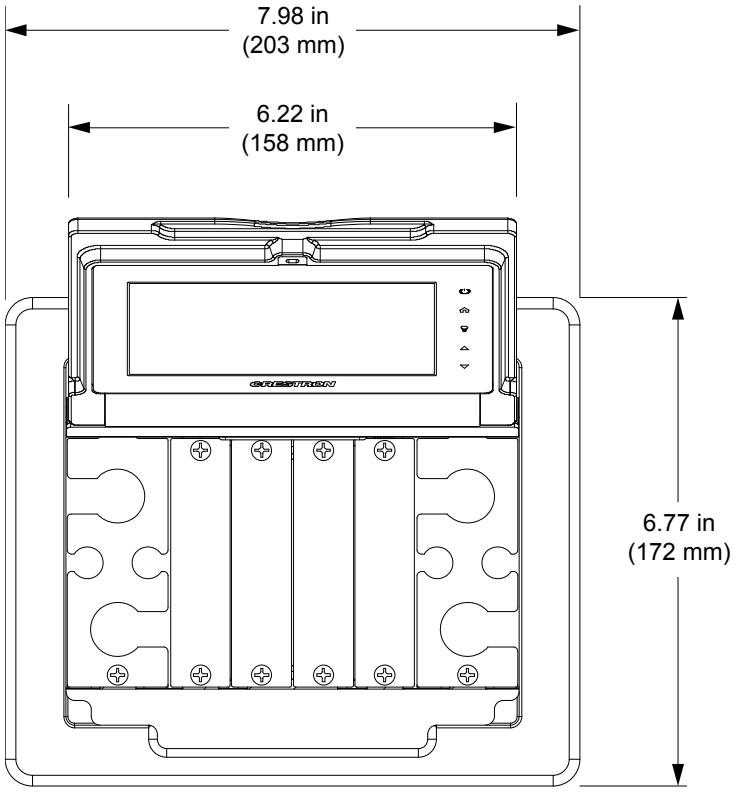
| SPECIFICATION | DETAILS |
|---|---|
| Available Accessories (Continued) | |
| CBL Series | Crestron Certified Interface Cables |
| CBLR Series | Cable Retractors |
| CBLRA-BRKT-3-H | Horizontal Mounting Option for up to three CBLR Cable Retractors |
| CEN-NVS200 | Network Video Streamer |
| CEN-SWPOE-16 | 16-Port Managed PoE Switch |
| Crestron App | Control App for Apple® iOS® |
| Crestron Mobile Pro® | Control App for iPhone®, iPad® and Android™ Devices |
| CSP-LIR-USB | IR Learner |
| FTA-CBLRA-INSERT-2WIRE-102 | Cable Retractor Spacer Insert for FlipTop 600 Series |
| FTA-CP-DP-101 | FlipTop Connector Plate, DisplayPort |
| FTA-CP-HD-101 | FlipTop Connector Plate, HDMI® |
| FTA-CP-RCA-103 | FlipTop Connector Plate, RCA x 3 |
| FTA-CP-RJ45-102 | FlipTop 2 Connector Plate, RJ45 x 2 |
| FTA-CP-USB-102 | FlipTop Connector Plate, USB x 2 |
| FTA-PWR-102 | FlipTop Dual AC Power Outlet Module, NEMA 5 |
| Fusion EM® | Energy Management Software |
| Fusion RV® | Remote Asset Management Software |
| myCrestron | Dynamic DNS Service for Crestron Systems |
| RoomView® Express | Remote Help Desk and Resource Management Software |
| VMK-WIN | TouchPoint® Virtual Mouse & Keyboard Software for Windows® |
| XPanel | Crestron Control® for Computers |

1. Supports Smart Graphics only. Not compatible with "traditional" UI projects.
2. License required. The FT-TSC600 supports a maximum of 250 BACnet objects when dedicated for BACnet use only. Actual capabilities are contingent upon the overall program size and complexity.
3. Web-based installer setup requires Microsoft® Internet Explorer® web browser running on a Windows® PC.
4. To supply Cresnet power via the **NET** port, the FT-TSC600 must be powered using an IEE 802.3at Type 2 PoE+ PSE (Power Sourcing Equipment). If the FT-TSC600 is powered by an 802.3af or 802.3at Type 1 Poe PSE, no load should be connected to the **24** terminal of the **NET** port, and an external Cresnet power supply must be used to power any attached dev ices that require Cresnet power.
5. Item(s) sold separately.

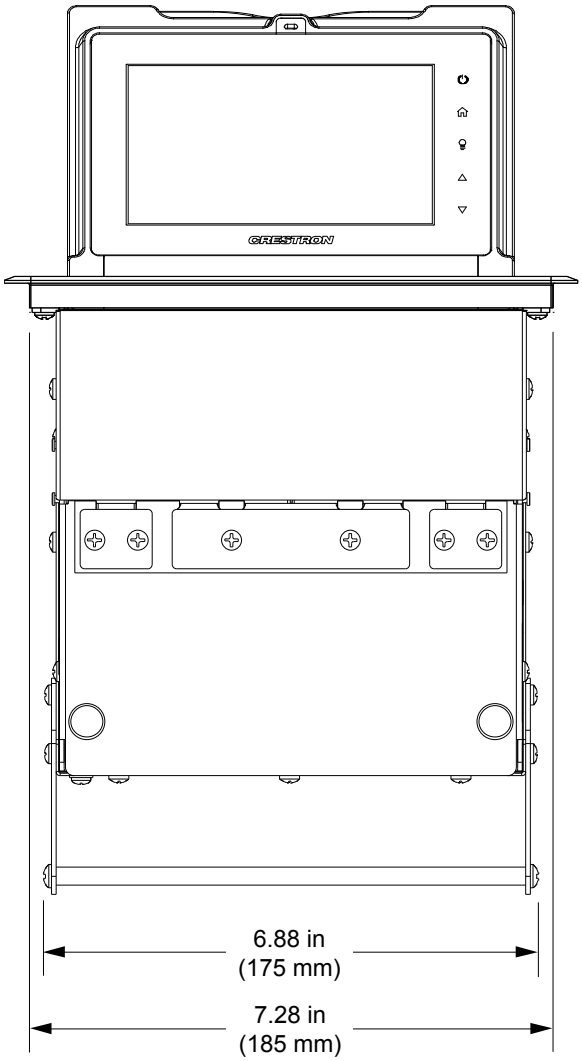
## Physical Description

This section provides information on the connections, controls, and indicators available on the FT-TSC600.

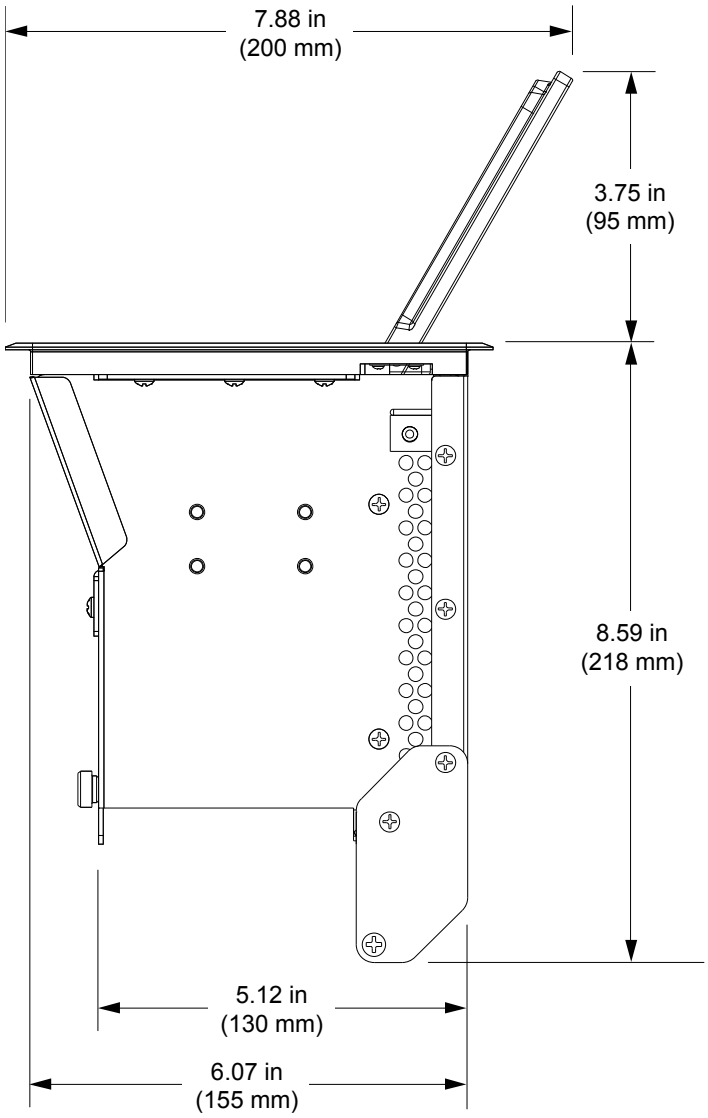
***FT-TSC600 Overall Dimensions (Top View)***



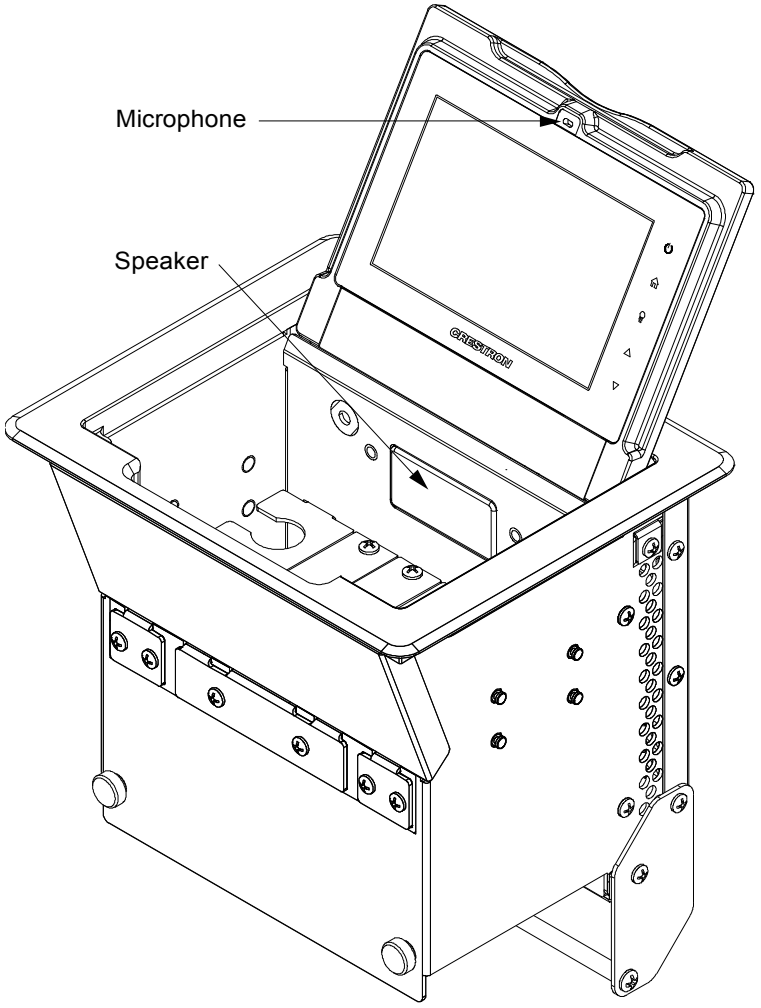
*FT-TSC600 Overall Dimensions (Front View)*



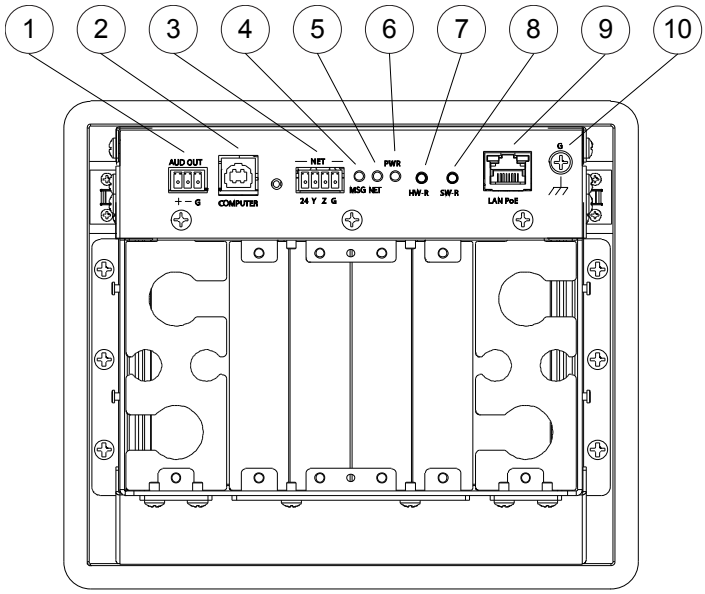
***FT-TSC600 Overall Dimensions (Side View)***



*FT-TSC600 (Oblique View)*



*FT-TSC600 (Bottom View)*

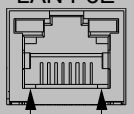



*Connectors, Controls, and Indicators*

| # | CONNECTORS[1], CONTROLS, AND INDICATORS | DESCRIPTION |
|---|---|---|
| 1 | AUD OUT<br>+ – G | (1) 3-pin 3.5 mm detachable terminal block;<br>Balanced mono line level audio output;<br>Output impedance: 100 Ω;<br>Maximum output level: 4 Vrms |
| 2 | COMPUTER<br>Pin 2 Pin 1<br>Pin 3 Pin 4 | (1) USB Type B female;<br>USB computer console port<br>(6 foot cable included)<br>**PIN** / **DESCRIPTION**<br>1 – +5 Vdc<br>2 – Data -<br>3 – Data +<br>4 – Ground |
| 3 | NET<br>24 Y Z G | (1) 4-pin 3.5 mm detachable terminal block;<br>Cresnet master port;<br>Connects to C2N-IO Control Port Expansion Modules and other Cresnet devices[2]<br>**24**: Power (24 Vdc)<br>**Y**: Data<br>**Z**: Data<br>**G**: Ground |
| 4 | MSG LED | (1) Red LED, indicates processor has generated an error message<br>To view the contents of the message log, use the front panel buttons or Crestron Toolbox |
| 5 | NET LED | (1) Amber LED, indicates communication with the Cresnet system |

*(Continued on following page)*

***Connectors, Controls, and Indicators (Continued)***

<table>
<tr><th>#</th><th>CONNECTORS[1], CONTROLS, AND INDICATORS</th><th>DESCRIPTION</th></tr>
<tr><td>6</td><td>PWR LED</td><td>(1) Dual color LED;<br>Yellow indicates operating power supplied via PoE;<br>Green indicates device is ready</td></tr>
<tr><td>7</td><td>HW-R Button</td><td>(1) Recessed miniature push button for hardware reset</td></tr>
<tr><td>8</td><td>SW-R Button</td><td>Pressing this in combination with HW-R button performs a system restart without loading the program. Pressing it alone momentarily while the system is running restarts the program</td></tr>
<tr><td>9</td><td>LAN PoE[3]<br>  <br>Pin 8 Pin 1</td><td>(1) 8-pin RJ-45 with two LED indicators;<br>10BASE-T/100BASE-TX Ethernet port;<br>Power over Ethernet compliant;<br>Green LED indicates link status;<br>Yellow LED indicates Ethernet activity<br><table><tr><th>PIN</th><th>DESCRIPTION</th></tr><tr><td>1</td><td>TX +</td></tr><tr><td>2</td><td>TX -</td></tr><tr><td>3</td><td>RX +</td></tr><tr><td>4</td><td>DC +</td></tr><tr><td>5</td><td>DC +</td></tr><tr><td>6</td><td>RX -</td></tr><tr><td>7</td><td>DC -</td></tr><tr><td>8</td><td>DC -</td></tr></table></td></tr>
<tr><td>10</td><td>G (Ground)<br> </td><td>(1) 6-32 screw, chassis ground lug</td></tr>
</table>

1. An interface connector for the **AUD OUT** port is provided with the unit.
2. Item(s) sold separately.
3. PoE+ dc power can also be available on a TX/RX pair.

# Setup

## Network Wiring

When wiring the Cresnet or Ethernet network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.

  **CAUTION:** Insufficient power can lead to unpredictable results or damage to the equipment. Use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

- For Cresnet networks with 20 or more devices, use a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality.
- For more details, refer to "Check Network Wiring" on page 38.

The FT-TSC600 can also use high-speed Ethernet for communications between the device and a control system, computer, media server, and other IP-based devices.

For general information on connecting Ethernet devices in a Crestron system, refer to the Crestron e-Control® Reference Guide (Doc. 6052) at www.crestron.com/manuals.

## Identity Code

**NOTE:** The latest software can be downloaded at www.crestron.com/software.

*Net ID*

The Net ID of the FT-TSC600 has been factory set to **02**. This Net ID is defined as the "Master" control system.

*IP ID*

The IP ID is set within the FT-TSC600's IP table using Crestron Toolbox™. For information on setting an IP table, refer to the Crestron Toolbox help file. The IP IDs of multiple FT-TSC600 devices in the same system must be unique.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the Crestron Studio™ or SIMPL Windows program.
- Each device using IP to communicate with a control system must have a unique IP ID.

## Configuring the Touch Screen

**NOTE:** The only connection required to configure the touch screen is power. Refer to "Hardware Hookup" on page 33 for details.

**NOTE:** The FT-TSC600 can take up to 45 seconds to boot to a display after initial power up.

### *Access the Setup Screens*

The "Setup" menu is the starting point for configuring the FT-TSC600.

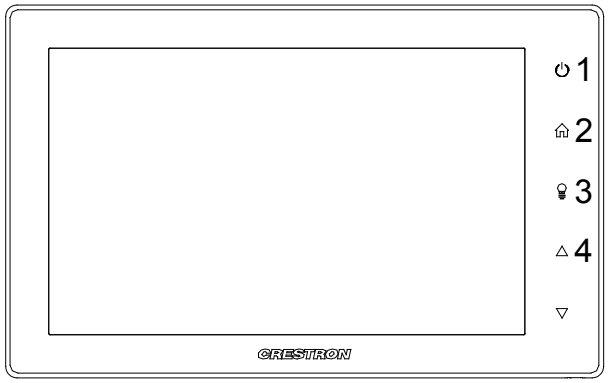
**NOTE:** If no project has been loaded or if an invalid project has been loaded, the screen displays a message saying "There is no display project to start. [Touch Screen to Enter Setup…]"

The setup screens enable basic configuration procedures prior to regular operation of the touch screen.

During regular operation of the touch screen, there are two ways to activate the setup functions:

1. Place a button on the project main page and assign the reserved join number (17242) that activates setup.
2. Press hard keys 1, 2, 3 and 4, to the right of the touch screen display, in sequence twice (i.e., press 1, 2, 3, 4, 1, 2, 3, 4) within a 5 second period.

***Button Numbering***




The "FT-TSC600 Setup" menu is displayed.

***"FT-TSC600 Setup" Menu***

The "FT-TSC600 Setup" menu is comprised of buttons for **Ethernet Setup**, **Audio Setup**, **Display Setup**, **Application Setup**, **Standby Timeout**, and **Diagnostics**. In addition, there is an **About** button that provides information about the touch screen and a **Save & Exit** button. The functions of each are detailed in the following pages of this guide.

## *Ethernet Setup*

On the "FT-TSC600 Setup" menu, touch **Ethernet Setup** to display the "Ethernet Setup" menu.

***"Ethernet Setup" Menu***

The "Ethernet Setup" menu displays current settings, such as whether DHCP is on or off, the touch screen's *Hostname* and its *IP Address*. There are controls for turning *DHCP* **On** or **Off** as well as controls which allow editing of the *Hostname* and *IP Address*. This menu also contains a *Link* indicator to show the status of the Ethernet connection. Other controls on this menu are explained in paragraphs that follow.

To edit the *Hostname*, touch **Edit** on the right side of the menu. The "Edit Hostname" screen opens with its on-screen keyboard.

***"Edit Hostname" Screen with On-Screen Keyboard***

Use the keyboard to enter the new name. Touch **Clear** to clear any previous entry, **Save** to save a new entry or **Cancel** to return to the previous screen.

To edit the *IP Address*, touch **Edit** on the right side of the "Ethernet Setup" menu. The "Edit IP Address" screen opens with its on-screen numeric keyboard, shown in the following illustration.

***"Edit IP Address" Screen with On-Screen Numeric Keyboard***

Use the keyboard to enter the new IP address. Touch **Clear** to remove any previous entry, **Backspace** to delete the last digit, **Enter** to save a new entry, or **Cancel** to return to the previous screen.

Touch the ellipsis (**…**) at the top of the "Ethernet Setup" menu to display additional Ethernet parameters and the controls which allow their entry.

***"Ethernet Setup" Menu (Additional Parameters)***

The additional parameters are *Subnet Mask*, *Default Router*, *Mac Address* and *Domain*. For *Subnet Mask*, *Default Router* or *Domain*, touch **Edit** on the right side of the menu to open on-screen keyboards like the ones described above.

After all new settings have been made, touch **Reboot** at the bottom of the "Ethernet Setup" menu to reboot the touch screen, so the new settings can take effect.

Touch **Advanced Settings** to display the "Advanced Ethernet Setup" menu.

***"Advanced Ethernet Setup" Menu***

The "Advanced Ethernet Setup" menu provides controls for enabling or disabling SSL (Secure Sockets Layer, a protocol for encrypting information over the Internet) and for editing the *CIP Port*, *Secure CIP Port*, *CTP Port* and *Secure CTP Port*.

The SSL controls work as follows:

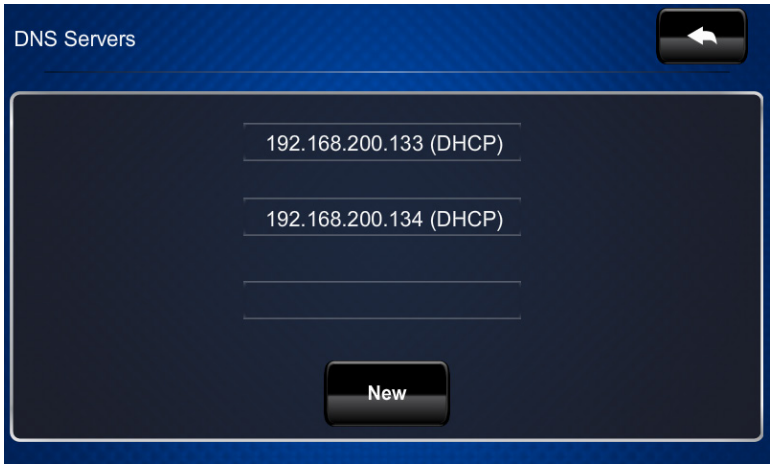
- **Off** disables the SSL capabilities of the FT-TSC600
- **Self** sets up self signing certificates
- **CA** uses an authority to assign the SSL certificates

**NOTE:** For more details on SSL settings, refer to the 3-Series Control Systems Reference Guide (Doc. 7150) at www.crestron.com/manuals.

To edit the *CIP Port*, *Secure CIP Port*, *CTP Port* or *Secure CTP Port*, touch **Edit** on the right side of the menu to open an on-screen keyboard like the ones described earlier in this guide.

Touch **DNS Servers** to display the "DNS Servers" screen.

***"DNS Servers" Screen***




The "DNS Servers" screen provides controls for adding or deleting the IP addresses of DNS (Domain Name System) registered computers on the network. To add a server's IP address, touch **New** to open an on-screen keyboard.

Use the keyboard to enter the IP address of the new DNS server. Touch **Clear** to remove any previous entry, **Backspace** to delete the last digit, **Enter** to save a new entry, or **Cancel** to return to the previous screen.

On the "Advanced Ethernet Setup" menu, touch the ellipsis (**…**) at the top to display the **On** and **Off** controls which allow enabling or disabling the *Webserver* and for editing the *Web Port* and *Secure Web Port*.

The default *Webserver* setting is **On**. Touching **Off** disables access to setup from a web browser.

To edit the *Web Port* or *Secure Web Port*, touch **Edit** on the right side of the screen to open an on-screen keyboard like the ones described earlier in this guide.

***"Advanced Ethernet Setup" Menu (Webserver)***

Touch to return to the main "Ethernet Setup" menu.

On the "Ethernet Setup" menu, touch **Ethernet Diagnostics** to display the "Ethernet Diagnostics" screen.

***"Ethernet Diagnostics" Screen***

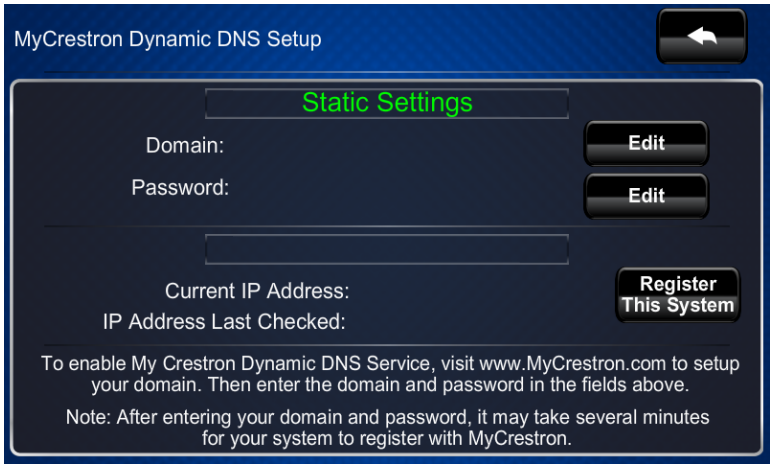
The "Ethernet Diagnostics" screen provides controls for verifying connections. Touch **Ping Default Router** to verify connection to the router. (The screen displays a "Passed" message to show successful connection.) Touch **Ping Crestron.com** to verify connection to an external DNS server.

Touch **Who** to display a list of devices connected to the PC via the Ethernet connection. These devices may be Crestron Ethernet devices, third-party Ethernet devices or PCs (including any PC using Crestron Toolbox to connect to the processor via Ethernet).

Touch to return to the "Ethernet Setup" menu.

On the "Ethernet Setup" menu, touch **MyCrestron Dynamic DNS** to display the "MyCrestron Dynamic DNS Setup" screen.

***"MyCrestron Dynamic DNS Setup" Screen***


MyCrestron Dynamic DNS Setup
Static Settings
Domain:
Edit
Password:
Edit
Current IP Address:
IP Address Last Checked:
Register This System
To enable My Crestron Dynamic DNS Service, visit www.MyCrestron.com to setup your domain. Then enter the domain and password in the fields above.
Note: After entering your domain and password, it may take several minutes for your system to register with MyCrestron.

To use MyCrestron Dynamic DNS, use a PC with Internet Explorer® to navigate to www.mycrestron.com and register a system with Crestron.

With the information provided from the MyCrestron home page, complete the information on the "MyCrestron Dynamic DNS Setup" screen. To enter the *Domain* and *Password*, touch **Edit** on the right side of the screen to open an on-screen keyboard like the ones described earlier in this guide. Then touch **Register This System**.

Touch to return to the "Ethernet Setup" menu.

Touch again to return to the "FT-TSC600 Setup" menu.

## *Audio Setup*

On the "FT-TSC600 Setup" menu, touch **Audio Setup** to display the "Audio Setup" screen.

***"Audio Setup" Screen***

The "Audio Setup" screen provides controls for muting (or unmuting) the audio, adjusting level for both *Master Volume* and *Media Volume*, as well as a control for playing a test .wav file. The *Media Volume* controls adjust H.264 streaming media level in relation to the *Master Volume* controls. Use the **Line Out** and **Speaker** buttons to choose whether audio plays via the line output or through the internal speaker.

Touch to return to the "FT-TSC600 Setup" menu.

## *Display Setup*

On the "FT-TSC600 Setup" menu, touch **Display Setup** to enter the "Display Setup" screen.

***"Display Setup" Screen***

The "Display Setup" screen provides controls to adjust *LCD (Screen) Brightness*.

Touch to return to the "FT-TSC600 Setup" menu.

## *Application Setup*

On the "FT-TSC600 Setup" menu, touch **Application Setup** to display the "Application Setup" screen.

***"Application Setup" Screen***

The "Application Setup" screen has controls to enable or disable the user program from running when the device boots and to restart the program.

Touch **Register** to enable the user program to load when the touch screen boots. The control text changes to **Unregister**. Touch **Unregister** to prevent the program from loading when the touch screen boots. The control text reverts to **Register**.

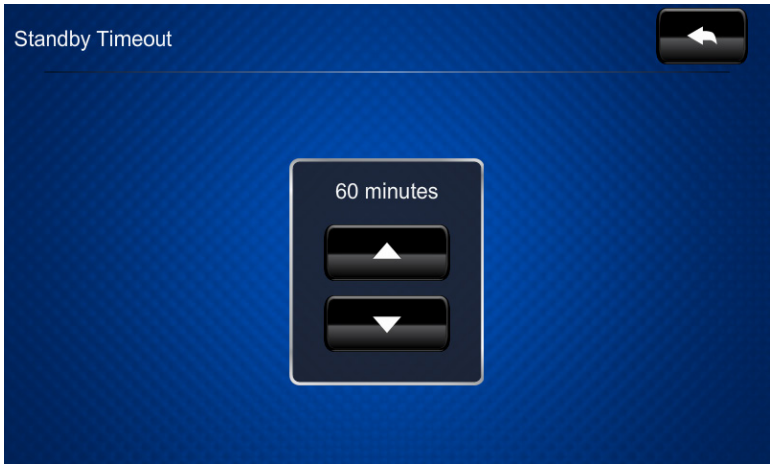
Touch **Start** to start the program. The control text changes to **Stop**. Touch **Stop** to stop the program. The control text reverts to **Start**.

Touch again to return to the "FT-TSC600 Setup" menu.

## *Standby Timeout*

On the "FT-TSC600 Setup" menu, touch **Standby Timeout** to display the "Standby Timeout" screen.

***"Standby Timeout" Screen***




The "Standby Timeout" screen provides controls to adjust standby timeout from 0 to 120 minutes.

Touch to return to the "FT-TSC600 Setup" menu.

## *Diagnostics*

On the "FT-TSC600 Setup" menu, touch **Diagnostics** to display the "Diagnostics" menu.

***"Diagnostics" Menu***

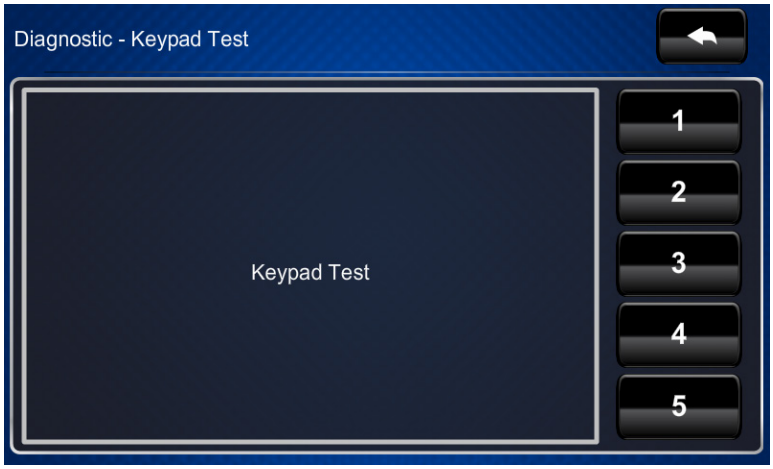
The "Diagnostics" menu displays the *Available Memory* and contains controls to **Show Hardware Configurations**, **Show Cresnet Devices**, **Show Message Log**, **Show Last Reboot Message** and **Performance Statistics**. In addition there are

controls to open various test screens and to initiate touch screen calibration. These are explained in the paragraphs that follow.

## *Keypad Test*

On the "Diagnostics" menu, touch **Keypad Test** to display the "Diagnostic – Keypad Test" screen.

***"Diagnostic – Keypad Test" Screen***




The "Diagnostic – Keypad Test" screen can be used to test the function of the hard key push buttons on the right side of the screen. When a button is pressed, its corresponding indication on the screen lights.

Touch to return to the "Diagnostics" menu.

## *Touch Test*

On the "Diagnostics" menu, touch **Touch Test** to display the touch test screen.

***Touch Test Screen***

The touch test screen can be used to test the function of the screen. When a location button is touched, its indication on the screen lights. This screen also contains a **Calibrate** button to initiate touch screen calibration.

During touch screen calibration, a crosshair appears at the center of the screen. Touch the center of the crosshair, which then moves to the upper left part of the screen. Touch the center of the crosshair and it moves to another part of the screen. Continue touching the center of the crosshair until calibration is complete.

**NOTE:** When touching the screen during calibration, be as accurate as possible.

Touch to return to the "Diagnostics" menu.

## *RAVA*

On the "Diagnostics" menu, touch **RAVA** to display the "Diagnostics - Rava" screen.

***"Diagnostics – Rava" screen***

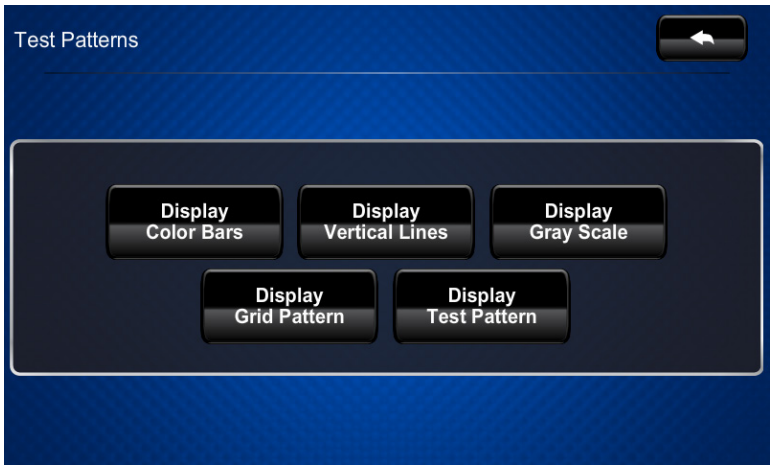
The "Diagnostics - Rava" screen provides controls for testing the use of Crestron's Rava SIP Intercom with the FT-TSC600. It can be used to test projects and settings. If the intercom works but the project does not, there is an issue with the project; if the intercom does not work, there is an issue with the settings.

Touch to return to the "Diagnostics" menu.

## *Test Patterns*

On the "Diagnostics" menu, touch **Test Patterns** to display the "Test Patterns" menu.

***"Test Patterns" Menu***




The "Test Patterns" menu contains buttons for selecting the different available test patterns: **Display Color Bars**, **Display Vertical Lines**, **Display Gray Scale**, **Display Grid Pattern** and **Display Test Pattern**.

Touch to return to the "Diagnostics" menu.

## *Calibrate*

On the "Diagnostics" menu, touch **Calibrate** to initiate the screen calibration procedure. Refer to "Touch Test" on page 25 for details.

Touch to return to the "FT-TSC600Setup" menu.

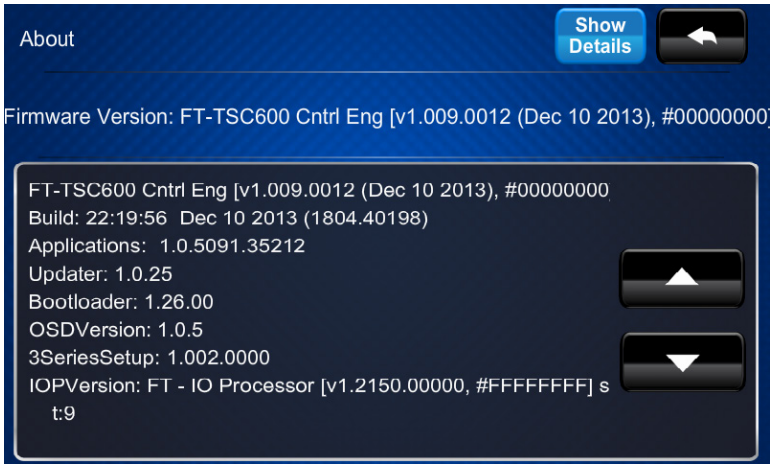
## *About*

On the "FT-TS600 Setup" menu, touch **About** to display the "About" screen.

***"About" Screen***

The "About" screen displays information about the firmware in the unit. Touch **Show Details** to display more information.

***"About" Screen (Details)***




Touch to return to the "FT-TSC-600 Setup" menu.

## *Save & Exit*

On the "FT-TSC600 Setup" menu, touch **Save & Exit** to save all settings, exit the setup screens and return to the main project.

## Supplied Hardware

The hardware supplied with the FT-TSC600 is listed in the following table.

***Supplied Hardware for the FT-TSC600***

| DESCRIPTION | PART NUMBER | QUANTITY |
|---|---|---|
| Metal, Plate, Mounting | 2036985 | 2 |
| Screw, 10-32 x 2", Steel, Socket HD, Zinc | 2037109 | 4 |
| Small Hole Plug | 2036647 | 4 |
| Large Hole Plug | 2036649 | 4 |
| Small Bushing, 5/16" ID, 0.5" OD | 2009522 | 4 |
| Large Bushing, 0.55" ID, 0.80" OD | 2010496 | 4 |

## Installation

**NOTE:** To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Consideration must be given if installed in a closed assembly, inside a closed desk or in a closed podium since the operating ambient temperature of these environments may be greater than the room ambient temperature. Contact with thermal insulating materials should be avoided on all sides of the unit.

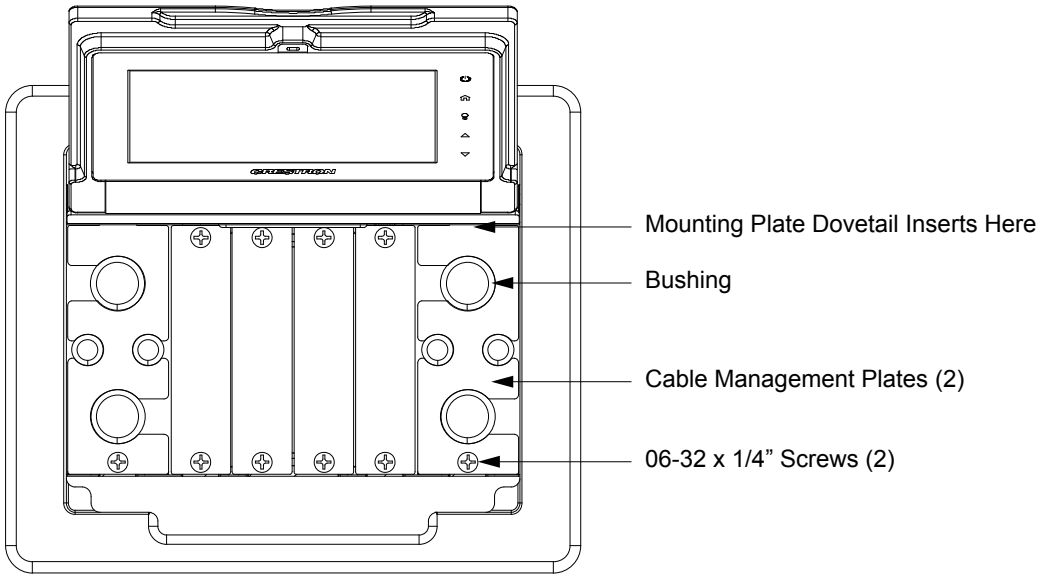
### *Cable Management Plates*

The FT-TSC600 ships with two cable management plates pre-installed. These provide a pullout cable solution for the **AUD OUT** (audio output) **COMPUTER** and **LAN** cables. A 6 foot (1.8 meter) USB Type A to Type B cable is included for the **COMPUTER** connection. Cables are looped through the cable management plates.

The included bushings must be installed before mounting the FT-TSC600 in a surface. For a neat appearance, any unused openings can be filled using the included hole plugs. The only tool required is a Phillips screwdriver.

1. Remove the two cable management plates and retain the 06-32 x 1/4" screw that holds each one in place.
2. Place the bushings on the cables (eight bushings supplied).
3. Thread the cables through the appropriate slots on each plate.
4. Snap the bushings into the plate slots.
5. Feed all excess cable through the opening.
6. Attach each plate by first sliding its dovetail into the slot toward the rear of the inside of the FT-TSC600, then dropping the front into place and securing it with the 06-32 x 1/4" screw from step 1. Refer to the following illustration.

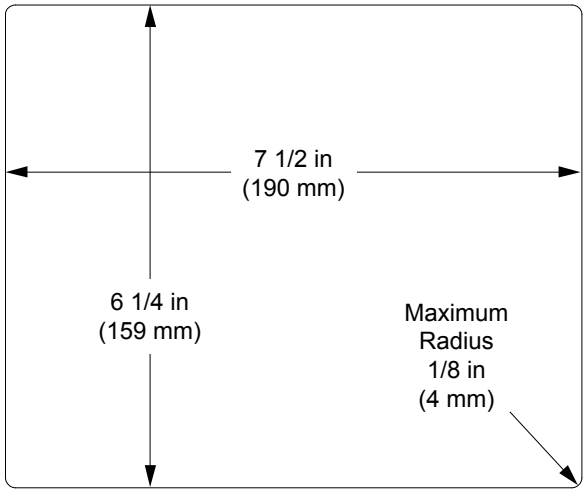
***Cable Management Plate Installation***




## *Mounting in a Surface*

The FT-TSC600 is designed to mount in a horizontal surface, such as a desktop, lectern, or podium. The following diagram illustrates the required opening size to accommodate the FT-TSC600. A cutout template (40143) is included.

***Cutout Dimensions***




**NOTE:** Before inserting the FT-TSC600 in the mounting hole, ensure that all required cables have been installed.

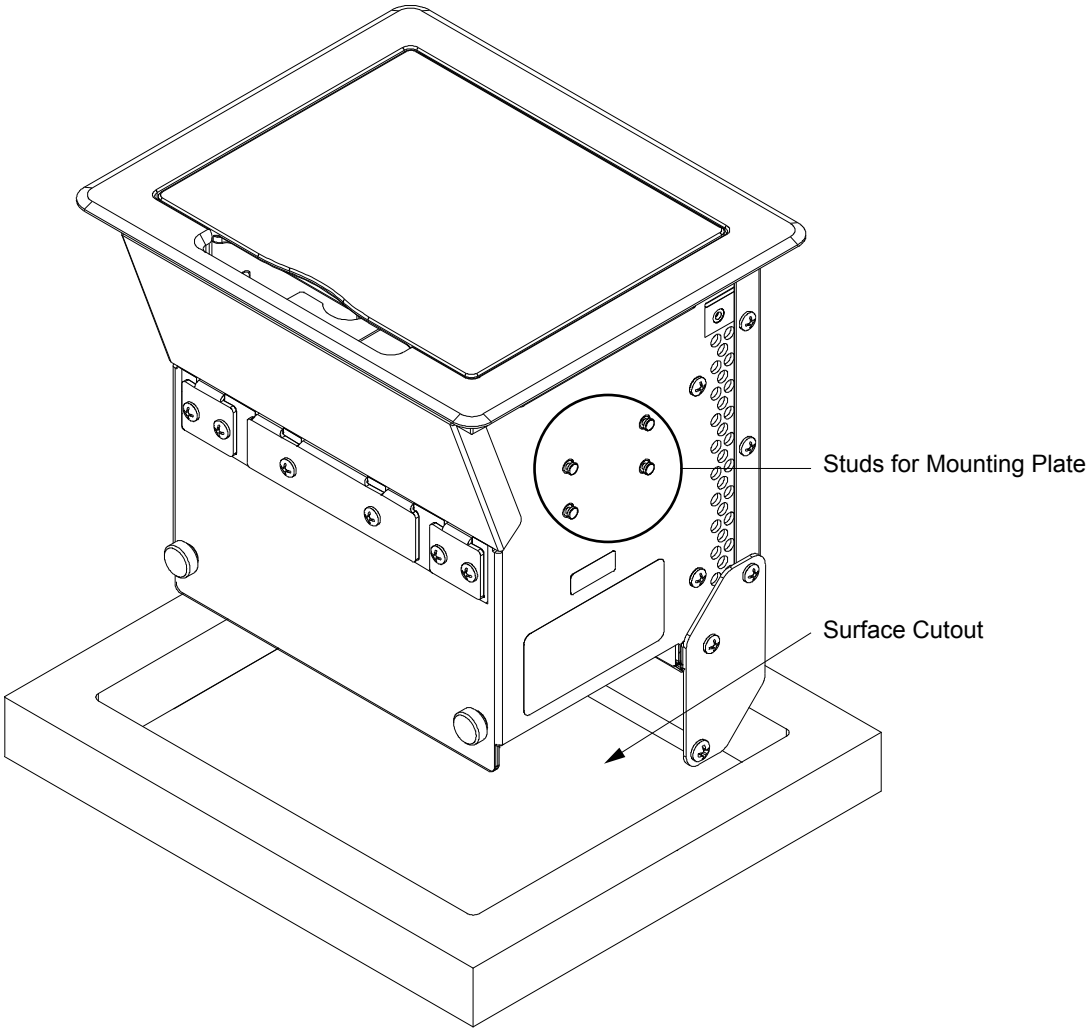
Tools required:

- Phillips screwdriver
- #10 Allen wrench

Use the following procedure to mount the FT-TSC600.

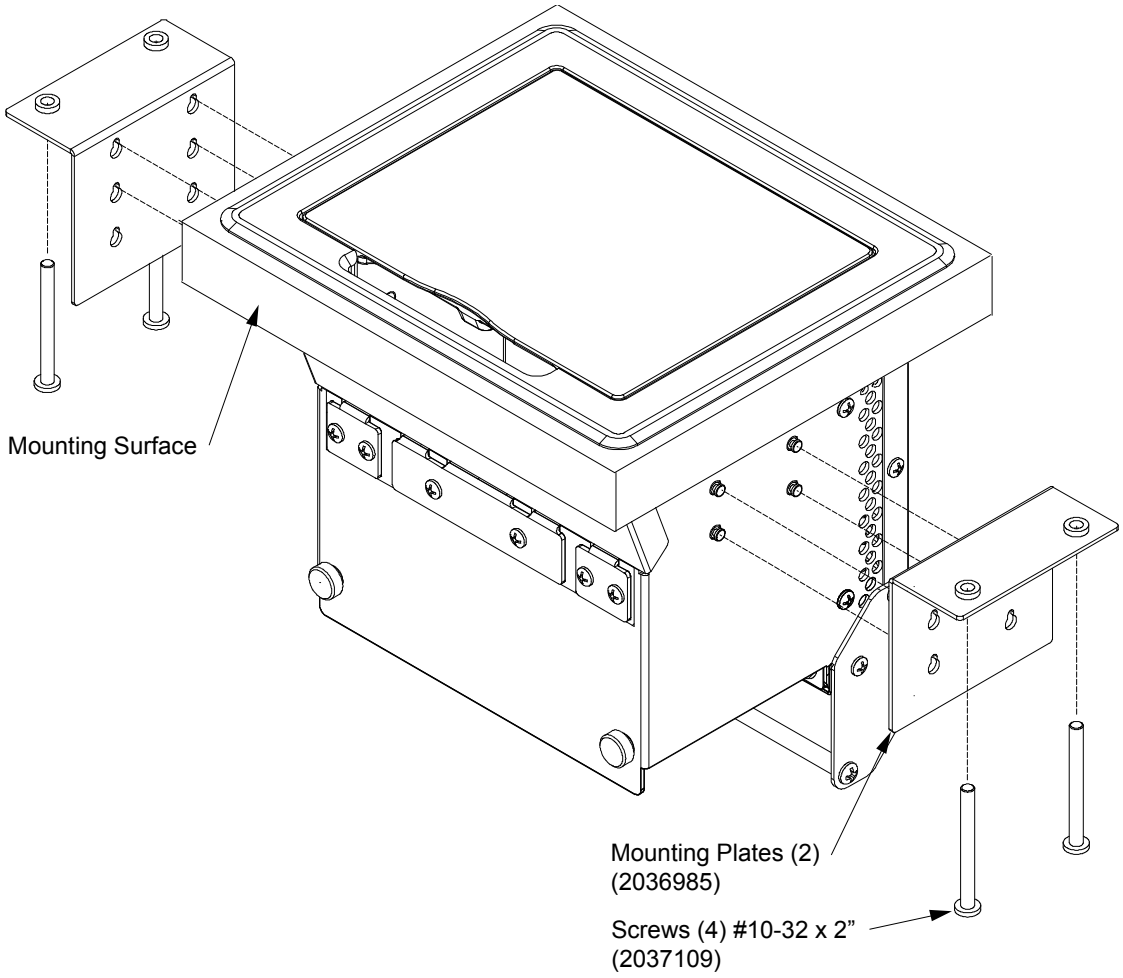
1. Position the FT-TSC600 in the mounting hole.

***Mounting Plate Stud Locations***




2. Install the four #10-32 socket screws (2037109) in the metal mounting plates (2036985) (two screws per plate). Refer to the following illustration.

***Mounting Plate Installation***




3. Slide the mounting plates over the studs on each side of the FT-TSC600.
4. Turn the four #10-32 socket screws equally, until they contact the underside of the mounting surface.

**NOTE:** Do not overtighten the #10 screws as this may damage the surface or the unit.

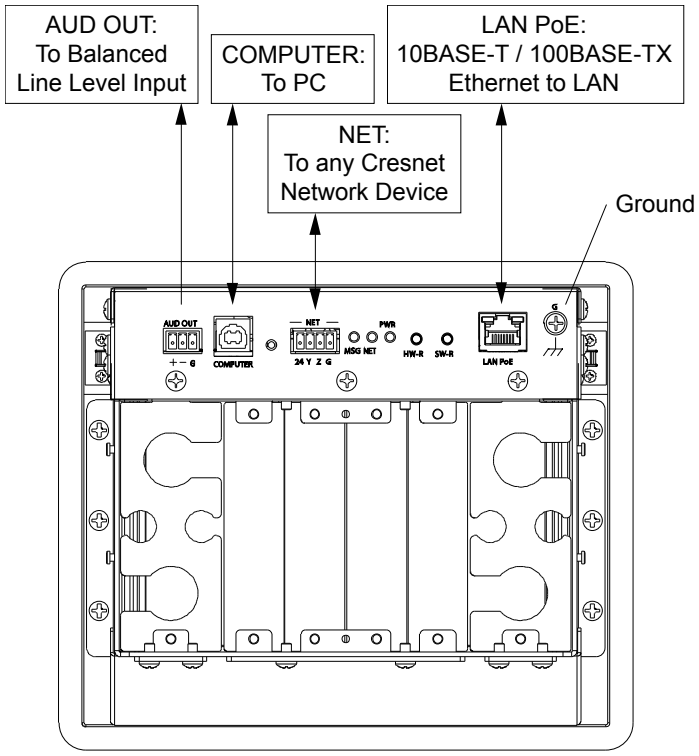
## Hardware Hookup

Make the necessary connections as called out in the illustration that follows this paragraph. Apply power after all connections have been made.

When making connections to the FT-TSC600, note the following:

- Use Crestron power supplies for Crestron equipment.
- The included cable cannot be extended.

***Hardware Connections for the FT-TSC600***




**CAUTION:** Do not apply excessive pressure to the touch screen display during handling. Doing so can crack the screen and damage the touch screen.

**NOTE:** Ensure the unit is properly grounded by connecting the chassis ground lug to an earth ground (building steel).

**NOTE:** To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications.

## Recommended Cleaning

Keep the surface of the touch screen free of dirt, dust or other materials that could degrade optical properties. Long-term contact with abrasive materials can scratch the surface, which may detrimentally affect image quality.

For best cleaning results, use a clean, damp, non-abrasive cloth with any commercially available non-ammonia glass cleaner. Bezels may not provide a complete watertight seal. Therefore, apply cleaning solution to the cloth rather than the surface of the touch screen. Wipe touch screen clean and avoid getting moisture beneath the bezels.

# Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs, projects, or firmware) can be transferred to the control system (or device). Finally, program checks can be performed (such as changing the device ID or creating an IP table) to ensure proper functioning.

**NOTE:** Crestron software and any files on the website are for authorized Crestron dealers and Crestron Service Providers (CSPs) only. New users must register to obtain access to certain areas of the site (including the FTP site).

While the next section provides an overview for communication, refer to "Establishing Communications with the Control System" in the 3-Series Control Systems Reference Guide (Doc. 7150) for connection details. If communications cannot be established, refer to "Troubleshooting Communications" in the same guide.

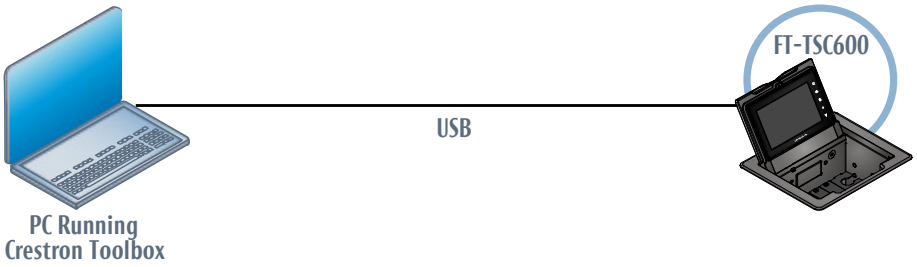
## Establishing Communication

Use Crestron Toolbox for communicating with the FT-TSC600; refer to the Crestron Toolbox help file for details. There are two methods of communication: USB, and TCP/IP.

### *USB*

**NOTE:** Required for loading projects and firmware.

***USB Communication***

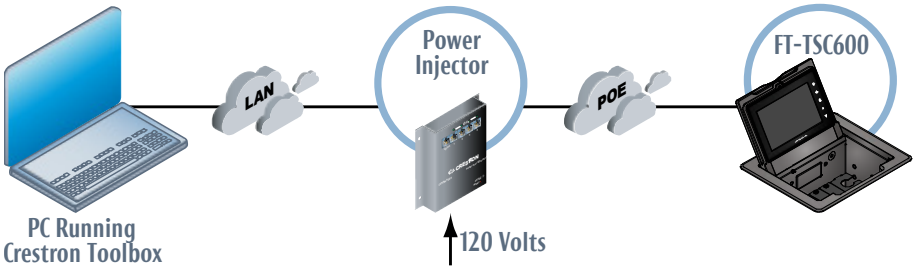



The **COMPUTER** port on the FT-TSC600 connects to the USB port on the PC via the included Type A to Type B USB cable:

1. Click **Tools | System Info**.
2. Click the icon.
3. For *Connection Type*, select *USB*. When multiple USB devices are connected, identify the FT-TSC600 by entering "FT-TSC600" in the *Model* text box, the unit's serial number in the *Serial* text box or the unit's hostname (if known) in the *Hostname* text box.
4. Click **OK**. Communications are confirmed when the device information is displayed.

*TCP/IP*

***Ethernet Communication***




The FT-TSC600 connects to PC via Ethernet:

1. Use the Device Discovery Tool (click the icon) in Crestron Toolbox to detect all Ethernet devices on the network and their IP configuration. The tool is available in Toolbox version 1.15.143 or later.
2. Click on the FT-TSC600 to display information about the device.

## Programs, Projects, and Firmware

Program, project, or firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron website as new features are developed after product releases. One has the option to upload programs and projects via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the Crestron Studio help file, SIMPL Windows help file, VT Pro-e® help file, or the Crestron Toolbox help file.

*Crestron Studio / SIMPL Windows*

If a Crestron Studio (or SIMPL Windows) program is provided, it can be uploaded to the control system using Crestron Studio (or SIMPL Windows) or Crestron Toolbox.

*Crestron Studio / VT Pro-e*

Upload the Crestron Studio (or VT Pro-e) file to the touch screen using Crestron Studio (or VT Pro-e) or Crestron Toolbox.

*Firmware*

Check the Crestron website to find the latest firmware. (New users must register to obtain access to certain areas of the site, including the FTP site.)

Upgrade FT-TSC600 firmware via Crestron Toolbox.

1. Establish communication with the FT-TSC600 as described in “Establishing Communication” on page 35.
2. Select **Tools** | **Package Update Tool…** to upgrade the FT-TSC600 firmware or double click on an appropriate Package Update File (PUF) located on the hard drive. The Package Update Tool is loaded as a standalone application.

## Program Checks

Actions that can be performed on the FT-TSC600 vary depending on whether it is connected via Cresnet or Ethernet.

*Cresnet Connections*

For Cresnet connections, using Crestron Toolbox, display the network device tree (**Tools | Network Device Tree View**) to show all network devices connected to the control system. Right-click on the FT-TSC600 to display actions that can be performed on the FT-TSC600.

*Ethernet Connections*

For Ethernet connections, using Crestron Toolbox, display the "System Info" window (**Tools | System Info**) and select the **Functions** menu to display actions that can be performed on the FT-TSC600.

# Problem Solving

## Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

***FT-TSC600 Troubleshooting***

| TROUBLE | POSSIBLE CAUSE(S) | CORRECTIVE ACTION |
|---|---|---|
| Device does not function. | Device is not communicating with the network. | Use Crestron Toolbox to poll the network. Verify network connection to the device. |
| | Device is not receiving power from a Crestron power source. | Use the provided Crestron power source. Verify connections. |
| **PWR** LED does not illuminate. | Device is not receiving power. | Verify PoE power source is properly attached. |
| Button press yields incorrect result. | Device is incorrectly programmed. | Verify the Crestron Studio or SIMPL Windows program. |
| Device loses functionality due to electrostatic discharge. | Device is improperly grounded. | Check that all ground connections have been made properly. |

## Check Network Wiring

*Use the Right Wire*

To ensure optimum performance over the full range of the installation topology, use Crestron Certified Wire only. Failure to do so may incur additional charges if support is required to identify performance deficiencies because of using improper wire.

*Calculate Power*

**CAUTION:** Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

**CAUTION:** Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. Use the Crestron Power Calculator to help calculate how much power is needed for the system (www.crestron.com/calculators).

When calculating the length of wire for a particular Cresnet run, the wire gauge and the Cresnet power usage of each network unit to be connected must be taken into consideration. Use Crestron Certified Wire only. If Cresnet units are to be daisy chained on the run, the Cresnet power usage of each network unit to be daisy chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is run from a Crestron system power supply network port, the Cresnet power usage of that unit is the Cresnet power usage of the entire run. The wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

***Cable Length Equation***

$$L < \frac{40{,}000}{R \times P}$$

Where: L = Length of run (or chain) in feet
R = 6 Ohms (Crestron Certified Wire: 18 AWG (0.75 $mm^2$))
or 1.6 Ohms (Cresnet HP: 12 AWG (4 $mm^2$))
P = Cresnet power usage of entire run (or chain)

Make sure the cable length value is less than the value calculated on the right side of the equation. For example, a Cresnet run using 18 AWG Crestron Certified Wire and drawing 20 watts should not have a length of run more than 333 feet (101 meters). If Cresnet HP is used for the same run, its length could extend to 1250 feet (381 meters).

**NOTE:** All Crestron certified Cresnet wiring must consist of two twisted pairs. One twisted pair is the **24** and **G** pair and the other twisted pair is the **Y** and **Z** pair.

*Strip and Tin Wire*

When daisy chaining Cresnet units, strip the ends of the wires carefully to avoid nicking the conductors. Twist together the ends of the wires that share a pin on the network connector and tin the twisted connection. Apply solder only to the ends of the twisted wires. Avoid tinning too far up the wires or the end becomes brittle. Insert the tinned connection into the Cresnet connector and tighten the retaining screw. Repeat the procedure for the other three conductors.

*Add Hubs*

Use of a Cresnet Hub/Repeater (CNXHUB) is advised whenever the number of Cresnet devices on a network exceeds 20 or when the combined total length of Cresnet cable exceeds 3000 feet (914 meters).

## Reference Documents

All documents mentioned in this guide are available at www.crestron.com/manuals.

***List of Related Reference Documents***

| DOCUMENT TITLE |
|---|
| 3-Series Control Systems Reference Guide |
| Crestron e-Control Reference Guide |

## Further Inquiries

To locate specific information or resolve questions after reviewing this guide, contact Crestron's True Blue Support at 1-888-CRESTRON [1-888-273-7876] or, for assistance within a particular geographic region, refer to the listing of Crestron worldwide offices at www.crestron.com/offices.

To post a question about Crestron products, log onto Crestron's Online Help at www.crestron.com/onlinehelp. First-time users must establish a user account to fully benefit from all available features.

## Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the FT-TSC600, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an "Addendum" in the Download column.

# Return and Warranty Policies

## Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange or service without prior authorization from Crestron. To obtain warranty service for Crestron products, contact an authorized Crestron dealer. Only authorized Crestron dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a Crestron Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to Crestron, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. Crestron reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by Crestron, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

## Crestron Limited Warranty

Crestron Electronics, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from Crestron, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touch screen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from Crestron or an authorized Crestron dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

Crestron shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended or if it has been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall Crestron be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. Crestron is not liable for any claim made by a third party or made by the purchaser for a third party.

Crestron shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, Crestron makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

Crestron software, including without limitation, product development software and product operating system software is licensed to Crestron dealers and Crestron Service Providers (CSPs) under a limited non-exclusive, non-transferable license pursuant to a separate end-user license agreement. The terms of this end user license agreement can be found at www.crestron.com/legal/software_license_agreement.

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